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FACTORS RELATED TO THE GRANTING OF COLLEGE-UNIVERSITY CREDIT FOR TRADE AND INDUSTRIAL EXPERIENCE IN INSTITUTIONS OFFERING INDUSTRIAL EDUCATION.

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DESCRIPTORS- *TEACHER EDUCATION, *EMPLOYMENT EXPERIENCE, *COLLEGE CREDITS, *INDUSTRIAL EDUCATION, *SCHOOL POLICY, NATIONAL SURVEYS,

THE OBJECTIVES OF THE STUDY WERE TO (1) DETERMINE THE EXTENT OF GRANTING DEGREE CREDIT FOR TRADE AND INDUSTRIAL EXPERIENCE, (2) DETERMINE WHETHER OR NOT CREDIT GRANTING INSTITUTIONS CAN BE CLASSIFIED BY SELECTED TRAITS, (3) INVESTIGATE PROCEDURES, PREREQUISITES, AND TRANSFER REGULATIONS, AND (4) DEVELOP A RECOMMENDED PROCEDURE FOR GRANTING CREDIT. QUESTIONNAIRES WERE PILOT TESTED ON SEVEN INSTITUTIONS AND MEMBERS OF A GRADUATE SEMINAR, REVISED, AND MAILED TO 201 COLLEGES AND UNIVERSITIES WITH 100 PERCENT RESPONSE. SOME FINDINGS WERE--(1) 49 OR 24.38 PERCENT OF THE INSTITUTIONS SURVEYED GRANT CREDIT FOR TRADE AND INDUSTRIAL EXPERIENCE, AND OTHERS PLAN TO DO SO, (2) MOST INSTITUTIONS GRANT SUCH CREDIT TO FEWER THAN 10 CANDIDATES PER YEAR, (3) THE POLICY ON GRANTING CREDIT DIFFERS SIGNIFICANTLY BY TYPE OF INSTITUTION, SIZE, GEOGRAPHICAL LOCATION, AND TYPE OF INDUSTRIAL EDUCATION PROGRAM OFFERED, (4) MOST INSTITUTIONS REQUIRE A SPECIFIC NUMBER OF RESIDENCE HOURS COMPLETED, RECOMMENDATION BY PREVIOUS EMPLOYER, AND PRIOR ENROLLMENT IN THE INSTITUTION BEFORE CREDIT IS GRANTED, AND (5) MOST INSTITUTIONS USE A COMBINATION OF WRITTEN, ORAL, AND SKILLS TESTS TO EVALUATE COMPETENCE BEFORE GRANTING CREDIT. THIS DOCUMENT IS AN EXTRACT FROM A THESIS. (EM)

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DONALD PAUL LAUDA

Directed by

Ray Bryan, Head, Department of Education

Lowell L. Carver, Chairman, Industrial Education Curriculum

IOWA STATE UNIVERSITY
of Science and Technology

Ames, Iowa 1966

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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by

Donald Paul Lauda

under the direction of

Dr. Ray Bryan, Head, Department of Education

Mr. Lowell L. Carver, Chairman, Industrial Education Curriculum

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Iowa State University
Of Science and Technology
Ames, Iowa

1966

IOWA STATE UNIVERSITY

OF SCIENCE AND TECHNOLOGY

Ames, Iowa 50010

Department of Education

August 21, 1966

Dear Industrial Educator:

On January 5, 1966 you were sent a questionnaire concerning the granting of college and university credit for trade and industrial experience. A 100 per cent response was realized and your response was certainly appreciated. Please accept our thanks for your time and interest.

The following pages represent a portion of the study which we hope will be of interest to you. The entire study has been microfilmed and can be obtained from University Microfilms, Ann Arbor, Michigan.

Any questions that you may have with reference to this study may be directed to the Industrial Education Department, Iowa State University, Ames, Iowa.

Sincerely,

Approved by:
Ray Bryan
Lowell L. Carver

Donald P. Lauda
Researcher

TABLE OF CONTENTS

	Page
INTRODUCTION	1
SURVEY OF LITERATURE	7
METHODS AND PROCEDURES	14
FINDINGS	19
SELECTED REFERENCES	61

INTRODUCTION

Educators realize today that we are living in an imbalance between manpower supply and demand. Changes in technology which have caused unemployment and underemployment have contributed to this imbalance. Attempts have been made and are currently being made to provide more opportunities for the education of our working force. Considerable effort has also been given to our youth, our working force of tomorrow. The educational level of the labor force will continue to climb. In the Manpower Report of the President in 1963, the Department of Labor (26, p. 1) stated that:

> There are about 4 million workers who are totally jobless, and millions who can get only part-time work or jobs below their highest level of skill. Still others have not been able to develop their natural potential to the fullest, for want of adequate educational and training opportunities. Many have been denied a chance to contribute fully as workers because of recial or other discrimination.
>
> Unemployment and underemployment such as this represent a social injustice contrary to the basic principles of our democracy. They are also a foolhardy waste of manpower resources in this period of cold-war pressures and intensified international competition. It is therefore a matter of national necessity to achieve an accelerated rate of economic growth and also to implement training and other programs which will enable all workers to take advantage of the expanded employment opportunities thus created.

Educational systems, as well as employers, trade associations, and nonprofit institutions, will have to assume a greater responsibility in preparing our working force. These systems have been aided by federal and state legislation since the passing of the Smith-Hughes Act in 1917. The Vocational Act of 1963, according to Keppel (12, p. 2), invites school administrators and teachers into a promising new era. Federal

funds have been increased to bring vocational education up to date and better prepare students for a complex society. President Johnson called the enactment of this act a dramatic evidence of our commitment to education as the key to our social and economic and technological and moral progress (23, p. 89).

The national occupational structure is undergoing a dramatic change which will affect the direction which educational systems will follow. Harris (6, p. 361) stated:

> During the ten year period 1960-1970 a 20 per cent growth of the labor force seems assured. But the growth will not be uniform among various occupational groups. Professional, semi-professional, and technical workers will, as a group, increase by 45 per cent; proprietors and managers by 24 per cent; and clerical and sales workers by 30 per cent. Skilled and semi-skilled workers, as a group, will increase at the 20 per cent average rate for all workers; employment in the service occupations will increase by 24 per cent; but the unskilled occupations will show no personnel increases at all.
>
> Inherent in these forecasts (and their validity is becoming apparent as we reach the midpoint of the decade) is the inescapable conclusion that employment opportunities are greatest in occupations requiring advanced levels of education and training.

Education for the world of work can come in a number of ways. Day schools, evening programs, and part-time programs are only a few means that are used to train the worker of today. Federal legislation can provide funds for these classes, that is it can provide money for buildings, equipment, tuition, but the training still depends upon the instruction that takes place in the classroom.

Swanson (20, p. 30) has stated that "no educational program is better than the capacity of the teacher". New teachers need to be prepared and current teachers must be up-graded if they are to maintain their skill in modern technology.

The Panel of Consultants on Vocational Education have assessed our current teacher force in vocational education. They stated (22, p. 170-171):

> Teacher education for trade and industrial education differs markedly from that for most of the other fields. In 1960-1961, there were 11,474 teaching positions in day schools, scattered among more than 80 occupational fields. In addition, there were 16,280 teaching positions in evening programs, and 7,472 in part-time programs. The diversity of occupational fields represented in the evening program is even greater than for the day schools. The need for occupational competency in such a wide range of fields represented in the evening program is even greater than for the day schools. The need for occupational competency in such a wide range of fields precludes teacher education programs of broad type which provide both the occupational content and professional education. Teachers must usually get their occupational competency through extended work experience.

Teachers will have to be prepared to meet the demand created by the construction of new vocational-technical schools and the addition to present facilities. Teacher education must come from the colleges and universities that have teacher training programs. The value of a good education cannot be over-emphasized and as Sweany (21, p. 15) has said, "the adequacy of programs of vocational education will hinge on the availability of teachers to staff the programs needed".

The Problem in Iowa

The State of Iowa has experienced an industrial expansion in the past decade. According to Hoschar (7, p. 20-A), 11,354 new jobs were expected to be created in 1965 by announced industrial developments. Other developments stated by this article were:

1. Thirty-six new industries were added during 1965.
2. Relocation of plants totaled 89.
3. There were 148 firms involved in 1963 announced expansions during the year.
4. The new industries will provide an estimated 1,645 jobs when the plants are completed and in operation.
5. Branch plants will add 2,920 new jobs.
6. Expansions will create 6,969 new jobs.

An educational system is only as good as its quality of instruction. In vocational education the teacher must skillfully demonstrate skill in the shop or laboratory, as well as in the classroom. Teachers must be equipped with practical experience and professional training. Walsh (31, p. 129) has said:

> Because the primary purpose of vocational education is to prepare individuals for employment or advancement in an occupation, the instructional program is based on the requirements and practices of an occupation, and teachers must be equipped by practical experience and professional training to provide students with the occupational skills, knowledge, attitudes, and appreciations they need to fulfill their aims.

Vocational teachers must have an understanding of the learning process and methods of teaching. The teacher must be able to use a wide variety of techniques and be able to adapt the content of each course to the needs of the students. Teacher training institutions have the staff to give these vocationally competent persons those skills necessary to accomplish this task.

Many industrial workers are reluctant to leave industry to pursue a teaching career. A loss of income in many cases, a fear of the unknown, and the required schooling causes many to disregard teaching as a career.

A number of solutions have been tried, such as raising teaching salaries and providing in-service training for new teachers. Another possibility exists and that is to grant a block of college or university credit based upon trade and industrial experience. It is hoped that this credit, based upon experience and tests, will act as an incentive to present industrial workers. This study is designed to pursue the idea of granting college or university credit for trade and industrial experience.

The State of Iowa has provided through legislation for the construction and operation of a maximum of twenty area vocational-technical schools and/or area community colleges. These schools will be the logical place to prepare people for the labor force. The need for teachers in an educational system of this magnitude will call for an added emphasis on teacher training in the colleges and universities within the State of Iowa.

Objectives

The objectives of this study were as follows:

1. To determine to what extent colleges and universities grant college-university credit for trade and industrial experience.
2. To determine whether or not an institution granting college or university credit for trade and industrial experience can be classified by:
   a. Type of institution.
   b. Size of institution.
   c. Proximity of the institution to industry.
   d. Type of program offered.

e. Geographical location of the institution.

3. To investigate, in those institutions which grant college-university credit for trade and industrial experience:
   a. Procedures for testing applicants to determine the extent of their skill and knowledge.
   b. Administrative procedures used when granting such credit.
   c. The prerequisites needed before an applicant can be considered for such credit.
   d. The regulations governing transfer students when such credit is involved.
4. To develop a recommended procedure to be followed by institutions in the granting of college-university credit for trade and industrial experience.

SURVEY OF LITERATURE

In 1930, Siedle (18) studied the practices in vocational industrial teacher-training institutions which grant college credit for trade experience. This appeared to be the first study of this type to be undertaken and was promoted by the Smith-Hughes Act of 1917.

A country-wide survey was undertaken with every state contacted for information. Fifty-five centers were contacted and 53 or 97 per cent responded. Two states were not included in the final study since they did not respond to the questionnaire. The written questionnaire was the sole means used to gather the data.

A summary of the findings was:

> 1. Fifty-three vocational industrial teacher-training centers contributed data to the study; 38 or 71.7 per cent of the reports were from colleges and universities, while 15 or 28.3 per cent were from the vocational divisions of State departments of education . . . .
>
> 2. Professional courses in vocational industrial education are offered for college credit by eight different plans of college and university course organization . . . .
>
> 3. The basic educational requirements of the 38 colleges and universities reporting vary for the different types of course organization. While the majority of institutions have courses open to individuals with trade experience who have an eighth grade or equivalent education, there are some that will not admit students for credit who have not completed a high-school education, and there are others that require some high-school preparation.
>
> 4. Four institutions offer courses through the special-conference plan, and one offers courses during short-term sessions for teachers in service only.
>
> 5. As many as eight institutions allow regular college credit to nonhigh-school graduates for professional vocational industrial education courses successfully pursued. The majority of colleges and universities allow only tentative college credit to nonhigh-school graduates, while seven institutions require complete high school preparation for regular college credit in the professional vocational industrial education courses pursued under the various plans of course organization.

6. Eight institutions or 47.1 per cent of the 17 colleges and universities offering courses by the special conference plan permit credit for certification purposes only.

7. Eighteen or 47.3 per cent of the 38 colleges and universities reporting have made some effort toward the evaluation of some type of experience--trade, teaching, or administrative . . . .

8. Colorado Agricultural College has assumed the lead in the organization of plan to evaluate experience. It is the only institution reporting that appears to have a definite program for evaluating supervisory and administrative experience for something more than the mere "practice teaching" credits preferred by some college or university vocational industrial teacher training centers.

9. Five colleges and universities allow credit for trade experience equivalent to a shop major . . . .

10. Eight institutions have adopted some form of trade test for determining the ability of candidates who desire to have their experience evaluated for college credits.

11. Twenty different trades have been recognized for college credit by 9, or 50 per cent, of the 18 colleges and universities reporting some practice of evaluating experience . . . .

12. Expert opinions indicating the views of leaders in the field of vocational industrial teacher training were received from 23 sources. These opinions, when divided into two classes--favorable and unfavorable--show 18 in the former group and 5 in the latter (18, p. 31-32).

A summary of the conclusions was:

1. Professional vocational industrial education courses are given in 38 college and university teacher training centers and are recognized for college credit, while 18 institutions have made some attempt to evaluate practical experience in terms of college credits . . . .

2. There is a tendency for vocational industrial teacher-training centers located in degree granting institutions to raise the basic educational requirements for entrance into the various types of course organization . . . .

3. Extension training is recognized for college credit where professional courses are involved in 30 of the degree-granting institutions reporting. It would seem from this condition that it might be likewise possible to grant college credit for trade, for teaching, and for administrative experience since these are nothing

more than training fields that might also be included in the category of extension education.

4. Regular college credit is allowed by a goodly number of institutions to high-school graduates only. There are, however, practically as many centers that allow regular college credit to nonhigh-school graduates. The greatest number of institutions giving professional vocational industrial education courses allow only tentative college credit to nonhigh-school graduates. This fact shows that degrees are not being given promiscuously to vocational students, and that high school entrance requirements must be satisfied in the majority of cases before a student may be considered a candidate for a degree in industrial education.

5. Eleven colleges and universities designated as training centers for vocational industrial education allow college credit for shop-teaching experience, while 10 centers permit the granting of college credit to related-subjects teachers for teaching experience. The credit allowed appears to be nothing more than that required to meet the practice teaching requirement in most colleges and universities.

6. Practices relative to allowing college credit to supervisors and administrators of vocational education for experience are not at all tangible . . . .

7. Institutions allow varying amounts of college credit for trade experience. The number of credits varies from 5 in one university to 32 in another. It was found that there is no consistent practice or uniformity of opinion as to the amount of college credit which should be allowed for trade experience.

8. Conflicting opinions as to whether or not practical experience, especially trade experience obtained in industry and not through course work in a college or university, should be recognized for college credits and the lack of a central clearing house for ideas on the subject have seemingly impeded the progress of the movement with the result that each institution has been more or less of a law unto itself . . . .

9. The lack of some coordinating influence and the failure of institutions to provide uniform standards for recognizing experience are negative factors hindering progressive action on the problem . . . .

10. There is no uniformity of practice relative to the method of recognizing or determining the quality or quantity of trade experience of an individual in terms of college credits . . . .

11. Many of the common and better-known trades have been recognized for college credit at one or more of the institutions allowing credit for some type of experience. In several instances persons with experience in certain of the less commonly known trades have been allowed college credit for their training and experience . . . .

12. Statements obtained from experts in the field of vocational industrial teacher training indicate a preponderance of opinion in favor of allowing college credit for experience. Twenty-three opinions were obtained, 18 of which are favorable and 5 of which are negative in their attitude of allowing college credit (18, p. 33-36) . . . .

Siedle (18, p. 11) summarized his report when he said:

It appears too, that there is considerable justification for granting college credit to a man who has spent four, five, six, or more years learning a trade, for his experience or knowledge and training or skill in his particular kind of work. College credit would be given if an individual were to take course work in a trade subject in some college or university, so it would seem that training gained on the job should be recognized for the equivalent of a college major. Is it, perhaps, that education does not consider the standards of trade training high enough for college credit certification, or is it merely because tradition holds that college degrees must be earned by pursuing actual course work?

Vezzani (29) reported in "Representative Plans for Evaluating Trade and Industrial Experience for College Credit", presented at the Central Regional Conference in St. Louis, Missouri on February 23, 1954, the results of a survey conducted under the auspices of the University of Michigan. This survey appeared to be one of the latest conducted to identify the plans for evaluating trade and industrial experience for college credit.

Questionnaires were sent to a carefully chosen purposive sample of industrial education departments in the United States. Of the 33 institutions contacted, 28 (85 per cent) responded to the inquiry. A summary of the most important findings was:

1. Of the 28 agencies which answered the questionnaire, fourteen indicated that college credit was allowed for trade experience. This figure represents 57 per cent of those included in the survey.

2. Eleven of the 28 (39 per cent) indicated a definite plan is in effect for the evaluation of trade experience in terms of college credit.

3. Examination of the plans used to evaluate trade experience for college credit shows considerable variation in procedure and requirements.

4. The minimum number of years of trade experience required before the candidate is considered for credit varies from one to four years. Some colleges are willing to evaluate one year of experience whereas others will not consider evaluation of trade experience unless the candidate has served a minimum of four years in the trade.

5. The number of credits (semester hours, term hours, units, quarter hours, semester credits) allowed for trade experience varies from six to 40.

6. Some institutions evaluate experience only in terms of similar experiences gained in campus course offerings. In such cases, the instructor who teaches the course examines the candidate and recommends the amount of credit. The examination may be oral, written or performance type or any combination thereof. Some use only the written while others use only the performance.

7. In some cases, trade competency type examinations are used. These are usually administered by a committee made up entirely of educators or a combination of educators, labor, and management. The credit in such cases may be granted as course credit or as a given number of units towards degree requirements.

8. In one state, California, a Board of Examiners is responsible for the evaluation of trade experience. This board recommends to all state colleges the amount of credit to which the candidate is entitled. State colleges may then accept or reject this recommendation when the candidate applies for admittance to the college.

9. Some institutions evaluate not only trade experience but also general industrial experience, experiences of a supervisory or technical nature, and plant instructor experiences.

10. In most cases, the credit granted for trade experience is undergraduate credit to be applied toward a degree in trade and industrial education.

> 11. Many of the agencies contacted in the survey, which do not now have plans for the evaluation of trade experience, showed considerable interest in the survey . . . .
>
> 12. Several colleges reporting such plans in operation complained of the lack of requests for the evaluation of trade experiences. Some indicated doubt that the work involved in setting up a plan is justified in terms of the number being served.
>
> 13. Plans for granting college credit for trade experience have been in effect for over 20 years.
>
> 14. Units earned for trade experience are credited to the individual after he has earned a given number of units on the campus, a given number of units of credit for trade experience being granted after the student has completed 30 units or one semester of work. This is continued each semester until the individual receives all of the credit earned for his trade experience (29, p. 28-29).

Lauda (13), in 1964, reported the findings of a survey of 41 institutions offering an industrial education curriculum. This report was titled, "College Credit for Work Experience". Two purposes of this investigation were: (1) to gather information concerning the practice of granting college credit for work experiences; (2) the information gained in this study could be extremely valuable in determining the procedures to be used at Iowa State University for the granting of such credit.

Questionnaires were sent to a carefully selected sample of 54 institutions who offer a curriculum in industrial education. Of the 54 institutions contacted 41 or 76 per cent responded to the inquiry. In summarizing Lauda's findings, it was revealed that:

1. Of the 41 agencies which answered the questionnaire, 27 indicated that they grant college credit for work experience. This figure represents 66 per cent of the respondents.
2. Of those offering college credit for work experience, 72 per cent responded that they evaluate industrial competence with

written, skill, and oral examinations, or combinations of these tests.

3. The number of credits (semester hours, term hours, units, quarter hours, semester credits) allowed for work experience varies from 3 to 32 with an average of 28.4 quarter hours. One institution indicated that it did not have a limit set on the number of hours that could be earned in this manner.
4. Credit is granted after the examination in one lump sum in 46 per cent of the institutions. The rest grant the credit when the course is taught each quarter, after each test, or over a three year period.
5. It was found that 68 per cent of the institutions do not make the student pay tuition for the credit granted for work experience.
6. Fifty-seven per cent of the institutions will accept credit based upon work experience from a transfer student.
7. Institutions who do not grant college credit for work experience showed considerable interest in the survey.

METHODS AND PROCEDURES

Introduction

It was the intent of this study to determine the factors related to the granting of college and university credit for trade and industrial experience in institutions offering an industrial education curriculum. This study was designed to study every college and university in the nation and Puerto Rico which have such a curriculum. The need for the study, the scope of the problem, and the definition of terms were considered in the first chapter. Literature pertaining to this study was discussed in Chapter Two.

This chapter contains a description of the methods and procedures employed in this investigation. It has been divided into four parts: funding, description of the population, construction of the questionnaire, and organization of the data.

Funding

A research proposal was constructed stating the objectives of the proposed study, administrative help available to complete the study, procedures to be used, budgeting necessary, and a sample of the proposed questionnaire. This proposal was submitted on June 12, 1965 to the Iowa Department of Public Instruction, Division of Vocational Education, State Committee for Research, Demonstrations, and Experiments. The proposal was approved by this committee and funds were provided to defray the costs expected.

Population

The institutions in the United States and Puerto Rico, which offer an industrial education curriculum (including industrial arts), were included in this study. The "Industrial T acher Education Directory, 1963-64" was used to compile the mailing list. A questionnaire was mailed to every institution listed in this directory, for a total of 201 questionnaires. This directory lists the institutions by state, their addresses, and staff members and their positions. It was possible, therefore, to address the questionnaires to each department head personally.

Questionnaire

Construction

The questionnaire was developed with the objectives of the study as its source of direction. Preliminary studies, discussed in the review of literature, also served as a basis for the construction of the questionnaire.

Open-end questions were held to a minimum in order to facilitate the answering of the questions and to facilitate the coding process involved when the questionnaires were returned. The questionnaire was divided into four parts:

1. General information: this part was designed to classify each institution as to type, size, and location. It also asked whether the institution does or does not grant college-university credit for trade and industrial experience. Those institutions

that did not grant such credit were instructed to return the questionnaire with parts II, III, and IV blank.

2. Granting of credit: this part was designed to explain how each institution grants such credit as well as its history in using this technique.
3. Prerequisites for credit: those who receive such credit must have an industrial background and part III was designed to determine the minimum standards that the institution uses as prerequisites for granting such credit.
4. Methods of evaluation: candidates for such credit usually are evaluated prior to the granting of college-university credit for trade and industrial experience. Part IV provided questions which revealed each institution's method of evaluation.

A copy of the questionnaire has been placed in the appendix.

Pilot study

The first draft of the questionnaire was tested in a pilot study. Seven institutions were chosen for the purposive sample. Five of these institutions were known to grant college-university credit for trade and industrial experience. The other two were known to disregard this practice entirely. Both groups were asked to complete the form and to constructively criticize the items so that they could be made more meaningful. All seven institutions responded to the pilot study, several with helpful criticisms.

Seminar

After the results of the pilot study had been examined and the appropriate changes made, the proposed study was presented to a group of educators and graduate students at a seminar. Participants in the seminar were provided with copies of the questionnaire and asked to evaluate it. Helpful suggestions were given at this time and several questions were revised prior to the final printing of the questionnaire.

Final

After all deletions and corrections had been made, the questionnaire was photo-reduced so that the cover letter and the complete questionnaire required only four pages.

The first questionnaire was mailed to the 201 institutions on January 6, 1966. These questionnaires were returned directly to the researcher who assumed the responsibility for all coding and processing. A follow-up was sent to those who had not responded to the initial questionnaire. Approximately three weeks later a certified letter was sent to the non-respondents. This technique increased the per cent of returns to 81 per cent. Personal telephone calls to the remaining non-respondents raised this figure to 99 per cent on April 4, 1966. A second telephone call to the last two non-respondents resulted in a 100 per cent return on April 21, 1966.

Organization of Data

Data from the institutions were coded into four parts: general information, granting of credit, prerequisites for credit, and methods

of evaluation. The data were also broken down into further categories in order to facilitate the use of chi square in the final analysis.

Analysis of Data

After the material was tabulated, the analysis of the data was carried out as follows:

1. The general characteristics of each institution were analyzed to see if there was a significant difference between their characteristics and whether or not they grant college or university credit for trade and industrial experience. The following hypotheses were proposed:

   Hypothesis 1: There was no difference in policy among institution types.

   Hypothesis 2: There was no difference in policy among institutions of different size.

   Hypothesis 3: There was no difference in policy between land grant and non-land grant institutions.

   Hypothesis 4: There was no difference in policy among the institutions and their proximity to industry.

   Hypothesis 5: There was no difference in policy among the institutions in different geographical locations.

   Hypothesis 6: There was no difference in policy among institutions with varying industrial education programs.

   Hypothesis 7: There was no difference in policy among institutions with varying numbers of graduating industrial education teachers.

FINDINGS

The purpose of this study was to determine the factors related to the granting of college and university credit for trade and industrial experience in institutions offering an industrial education curriculum. The findings reported were based on data obtained from questionnaires completed by the department head of every institution in the United States and Puerto Rico which has an industrial education curriculum. Of 201 questionnaires sent out, 100 per cent were returned and useable.

The report of the findings was arranged into four groupings similar to the order in which the questions were asked. The first section includes the general characteristics of the institutions in relation to whether they grant such credit for trade and industrial experiences. The second section reports the procedures used in granting such credit. Section three contains the prerequisites needed for a person to be considered for such credit. The last section contains the methods used to evaluate candidates for such credit.

General Characteristics

Type of institutions responding

The data of Table 6 indicated the type of institutions in the United States and Puerto Rico which offer an industrial education curriculum. It was interesting to note that two junior colleges offer an industrial education curriculum.

Table 6. Number and type of institutions in the United States and Puerto Rico which offer an industrial education curriculum

Type of institution	Number of institutions	Per cent
University	90	44.8
Liberal arts college	55	27.4
Teachers college	28	13.9
State college	24	11.9
Junior college	4	2.0
Total	201	100.0

Institutions granting credit

From the data gathered, it was found that of the 201 institutions in the United States and Puerto Rico, 49 or 24.38 per cent do grant college or university credit for trade and industrial experience. This figure differed appreciably from the data presented in previous reports. This difference can be attributed to the fact that the previous studies were based upon a sample of the population whereas this study was based upon the entire population.

The respondents were also asked if their policy of granting such credit has been a continuous one. Of the 44 who answered this question, 44 or 100 per cent said that their policy has been continuous since the day it was instigated.

Those 152 respondents who do not grant such credit were asked if they plan to do so in the very near future. Of this group, 39 or 43.3

per cent said they plan to instigate such a practice. Twenty-three or 15.13 per cent of the respondents did not respond to this question. If those institutions who plan such a program actually adopt one, 88 or 43.8 per cent of the institutions with an industrial education curriculum will be granting college or university credit based upon trade and industrial experience.

Introduction of policy

The respondents were asked when they began granting college or university credit for trade and industrial experience. It can be observed in Table 7 that of the 41 institutions that responded, two began this practice in 1920. The greatest number of institutions beginning this practice appeared during the years 1948 and 1950. During these two years, 24.4 per cent of the 41 institutions began granting credit.

Number of students receiving credit

Data were gathered about the number of students from each institution who had received college or university credit for trade and industrial experience. In Table 8 the number of students that receive such credit is listed for each separate year. It can be observed that most institutions grant such credit to less than ten candidates per year. Of those institutions responding to this question, 62.5 per cent reported that they grant credit to no more than nine persons per year. This group also had the largest increase (14.7 per cent) from 1960-1961 to 1964-1965.

Table 7. Number of institutions granting college or university credit for trade and industrial experience, by years

Year	Number of institutions	Per cent
1920	2	4.9
1925	3	4.9
1930	3	7.3
1936	1	2.4
1945	1	2.4
1946	1	2.4
1947	1	2.4
1948	4	9.8
1950	6	14.6
1953	1	2.4
1954	1	2.4
1955	1	2.4
1956	1	2.4
1959	2	4.9
1960	3	7.3
1961	1	2.4
1962	3	7.3
1963	3	7.3
1965	3	7.3
1966	1	2.4
Total	41	100.0

Test of hypotheses

The chi square technique was employed to determine if the type of institution is related to whether or not an institution utilizes the practice of granting college or university credit for trade and industrial experience. The institutions were classified by their size, land grant or non-land grant, proximity to industry, geographical location, type of program offered in industrial education, and the number of industrial education teachers that are graduated per year. This technique tested

Table 8. Number of students receiving credit during the academic years 1960-1965

Persons receiving credit	Institutions per academic year					Yearly average	Net change in institutional use from 1960-61 to 1964-65 in per cent
	1960-61	1961-62	1962-63	1963-64	1964-65		
0-9	15	19	22	22	22	20.0	14.7
10-19	7	5	8	7	7	6.8	0.0
20-29	2	2	2	2	2	2.0	0.0
30-39	2	0	1	2	1	1.2	50.0(-)
40-49	0	1	0	0	1	.4	100.0
50-59	1	0	1	0	0	.4	100.0(-)
60-69	0	1	1	1	0	.6	0.0
70-79	0	0	0	1	0	.2	0.0
80-89	0	0	0	0	2	.4	200.0
Total	27	28	35	35	35		

whether the distribution of responses of the institutions differed from frequencies expected on the basis of the null hypotheses.

The chi square test was used at the five per cent level and the one per cent level of significance to test the null hypothesis for each chi-square contingency table.

A significant difference refers to a value which exceeds the tabulated value (32, p. 423), with appropriate degrees of freedom at the five per cent level of significance. A highly significant difference refers to a value which exceeds the tabulated value at the one per cent level with the appropriate degrees of freedom. Wert (32, p. 157) reported that chi square is not satisfactory when any cell in a multi-cell contingency table contains a value less than five. Therefore, some material has been grouped or eliminated when reported in the contingency tables.

Hypothesis 1 There were no differences in policy among institution types.

The chi square value of 15.46 with two degrees of freedom calculated from the data in Table 9 was found to be larger than both the five per cent value, 5.991, and the one per cent value, 9.210. This result indicated that the type of institution and its policy concerning the granting of such credit were related. The null hypothesis was rejected.

From the data available, it was demonstrated that there were differences in the types of institutions and their policy concerning the granting of credit for trade and industrial experience. More institutions with university status grant such credit than was expected, while fewer

Table 9. Type and number of institutions granting college or university credit for trade and industrial experience, actual and expected, in 1965

Type of institution	Practiced in 1965				Total	
	Yes		No			
	Actual	Expected	Actual	Expected	No.	Per cent
University	33	(22)	57	(68)	90	46
Liberal arts college	5	(14)	50	(41)	55	28
Teachers college and state college	11	(13)	41	(39)	52	26
Total	49		148		197	100

in the other categories use this practice. The difference may be attributed to the fact that the larger institutions have a sufficient enrollment to justify such a program.

Hypothesis 2 There was no difference in policy among the institutions of different size.

The calculated chi square value from the data in Table 10 was 11.73 with three degrees of freedom. This value was found to be greater than both the five per cent value, 7.815, and the one per cent value, 11,341. This result indicated that the size of the institution and policy concerning the granting of such credit were related. The null hypothesis was rejected.

Hypothesis 3 There was no difference in policy between land grant and non-land grant institutions.

The calculated chi square value from the data in Table 11 was 0.146

Table 10. Number of institutions, by size, granting college or university credit for trade and industrial experience, actual and expected, in 1965

Size of institution	Practiced in 1965				Total	
	Yes		No			
	Actual	Expected	Actual	Expected	No.	Per cent
Below 2499	7	(13)	47	(41)	54	27
2500-4999	8	(11)	35	(33)	43	21
5000-9999	14	(13)	41	(41)	55	27
10,000-over	20	(12)	29	(37)	49	25
Total	49		152		201	100

Table 11. Number of land-grant institutions granting college or university credit for trade and industrial experience, actual and expected, in 1965

Type of institution	Practiced in 1965				Total	
	Yes		No			
	Actual	Expected	Actual	Expected	No.	Per cent
Land grant	13	(12)	36	(37)	49	24
Non-land grant	36	(37)	116	(115)	152	76
Total	49		152		201	100

with one degree of freedom. This value was smaller than the five per cent value, 3.841, given in the chi square table. Since the five per cent level had not been reached, evidence was insufficient to indicate any significant difference in whether or not an institution was a land grant institution. The null hypothesis could not be rejected.

Hypothesis 4 There was no difference in policy among the institutions and their proximity to industry.

The calculated chi square value was 5.42. This value, with three degrees of freedom calculated from the data in Table 12, was smaller than the five per cent value, 7.815, given in the table. Since the five per cent value had not been reached, evidence was insufficient to indicate any significant difference between the size of institution and whether or not it grants college or university credit for trade and industrial experience.

Table 12. Number of institutions, according to their proximity to industry, granting college or university credit for trade and industrial experience, actual and expected, in 1965

Proximity to industry in miles	Practiced in 1965				Total	
	Yes		No			
	Actual	Expected	Actual	Expected	No.	Per cent
Below 10	21	(21)	51	(54)	72	36
10-24	10	(7)	20	(23)	30	15
25-49	5	(8)	26	(23)	31	15
50-above	13	(17)	55	(52)	68	34
Total	49		152		201	100

Hypothesis 5 There was no difference in policy among the institutions in different geographical locations.

The chi square value of 23.40, with three degrees of freedom calculated from the data in Table 13, was found to be larger than both the five per cent value, 7.815, and the one per cent value, 11.341. The result indicated that the geographical location of the institution and policy concerning the granting of such credit were related. The null hypothesis was rejected.

From the data available, it has been demonstrated that geographical location has a bearing on institutional policy concerning the granting of credit for trade and industrial experience. Fewer institutions in the west and south use this policy than expected, while more in the east do use this policy.

Figure 2 indicates the division of the United States into the areas presented.

Hypothesis 6 There was no difference in policy among the institutions with varying industrial education programs.

The data in Table 14 includes the material as it was reported by the respondents. It can be observed that four distinct programs were listed and four combinations of these. It was interesting to note that only one institution listed elementary industrial arts as a separate portion of its curriculum.

As was expected, those programs which involve vocational industrial education and technical education are more likely to utilize the policy of granting college and university credit for trade and industrial experience.

Table 13. Number of institutions, according to their geographical location, granting college or university credit for trade and industrial experience, actual and expected, in 1965

Geographical location	Practiced in 1965					
	Yes		No		Total	
	Actual	Expected	Actual	Expected	No.	Per cent
East	23	(11)	22	(34)	45	22
South	11	(10)	66	(58)	77	39
Mid-west	10	(11)	35	(34)	45	22
West	5	(8)	29	(26)	34	17
Total	49		152		201	100

The chi square value of 36.25, calculated from the data in Table 15 with three degrees of freedom, was found to be larger than both the five per cent value, 7.815, and the one per cent value, 11.341. The result indicated that there was a relationship between the program offered and whether or not such credit was granted. It should be noted that four categories were eliminated for this calculation due to the low number of frequencies in those cells.

Hypothesis 7 There was no difference in policy among institutions with varying numbers of graduating industrial education teachers.

The calculated chi square value of 2.66 with four degrees of freedom, calculated from the data in Table 16, was smaller than the table value at the five per cent level, 9.488. Since the five per cent value had not been reached, evidence was insufficient to indicate

Figure 1. Map of the United States with geographical areas

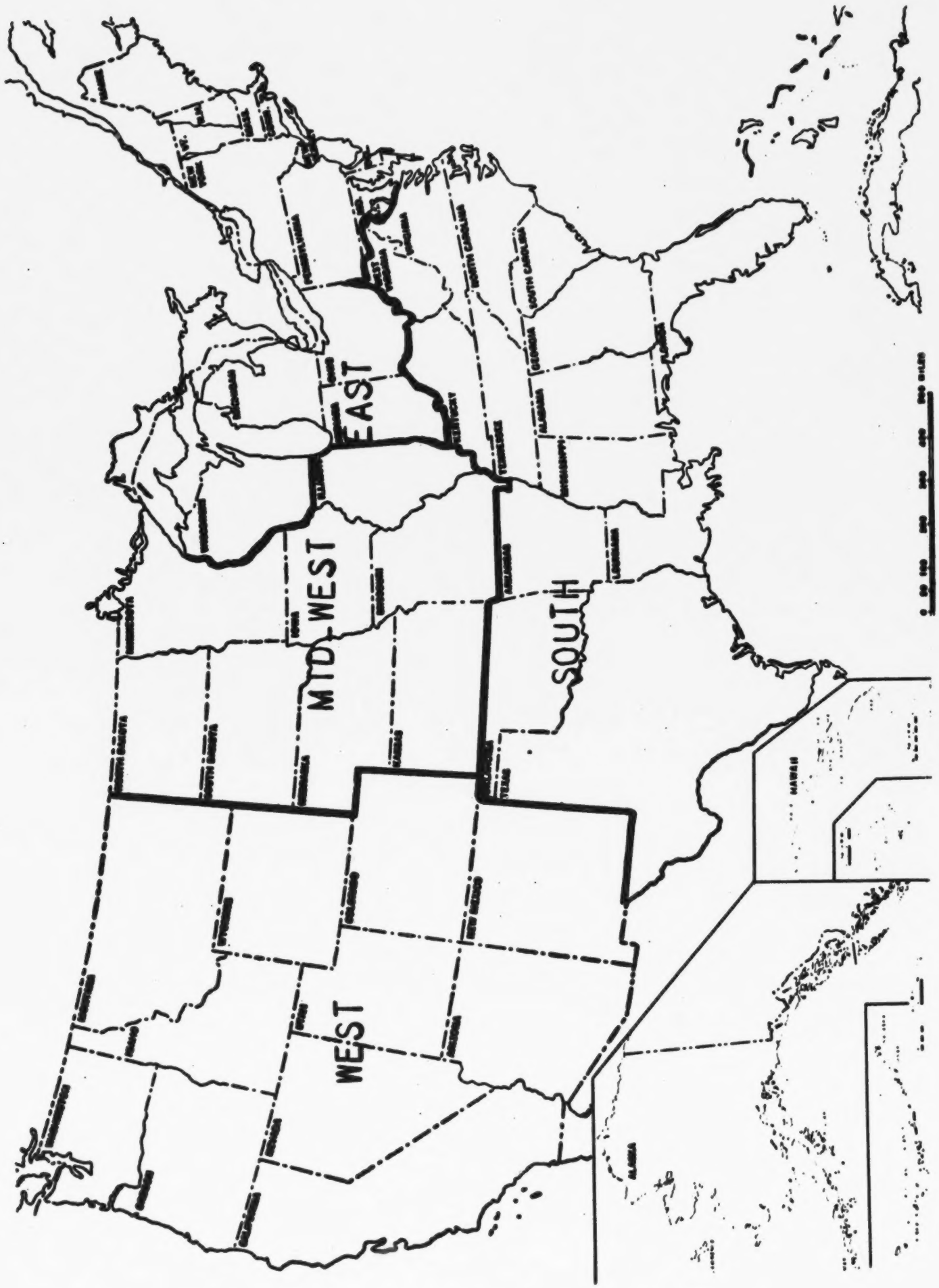
EAST
MIDWEST
SOUTH
WEST

Table 14. Number of institutions, according to program offered, granting college or university credit for trade and industrial experience, in 1965

Program	Responses Yes	Responses No	Per cent yes	Total
Industrial arts	7	77	8.3	84
Technical education	0	2	0.0	2
Vocational industrial education	2	3	40.0	5
All 3 above	19	15	55.9	34
Industrial arts and technical education	6	31	16.2	37
Industrial arts and vocational industrial education	13	22	37.1	35
Technical education and vocational industrial education	2	1	66.7	3
Elementary industrial arts	0	1	0.0	1
Total	49	152		201

a relationship between the number of industrial education teachers graduated and whether such credit is granted. The null hypothesis could not be rejected.

Summary of chi square The results of the testing of the characteristics of the institutions to whether or not they grant college or university credit for trade and industrial experience indicated there

Table 15. Number of institutions, according to program offered, granting college or university credit for trade and industrial experience, actual and expected, in 1965

Program offered	Practiced in 1965 Yes Actual	Yes Expected	No Actual	No Expected	No.	per cent
Industrial arts	7	(20)	77	(64)	84	44
Combination of industrial arts, technical education and vocational industrial education	19	(8)	15	(26)	34	18
Combination of industrial arts and technical	6	(9)	31	(28)	37	19
Combination of industrial arts and vocational industrial	13	(8)	22	(27)	35	19
Total	45		145		190	100

was: (a) a highly significant difference by institution type, size, geographical location, and type of industrial education program offered, but (b) no significant difference between the number of graduating industrial education teachers, proximity to industry, being a land grant institution, and whether or not an institution grants such credit.

Table 16. Number of institutions, by number of teachers graduating per year in industrial education, granting college or university credit for trade and industrial experience, actual and expected, an average of the years 1960-1965

Teachers graduated	Years 1960-1965 Yes Actual	Yes Expected	No Actual	No Expected	No.	Per cent
0-10	7	(11)	40	(36)	47	25
11-20	18	(17)	50	(51)	68	36
21-30	10	(9)	26	(27)	36	19
31-50	6	(5)	13	(14)	19	10
51-above	6	(5)	13	(14)	19	10
Total	47		142		189	100

Granting of Credit

Residency of candidate

With reference to the number of residence hours a candidate must have passed before credit can be granted for trade and industrial experience, two institutions did not respond. Of the 47 that answered, 37 or 78.7 per cent indicated that they have a set number of hours that must be passed prior to the granting of such credit.

The data in Table 17 reveals the number of residence semester hours required by the 32 institutions that indicated a specific number of required hours. It can be observed that 15.6 per cent required that the candidate must be in his fourth year of college before the credit was granted. It is also interesting to note that one-half of the institutions

Table 17. Number of residence semester hours required before credit can be granted

Residence hours	Number of institutions	Per cent
0-9	0	0.0
10-19	8	25.0
20-29	1	3.1
30-39	8	25.0
40-49	1	3.1
50-59	0	0.0
60-69	3	9.4
70-79	1	3.1
80-89	1	3.1
90-99	2	6.3
100-above	5	15.6
other[a]	2	6.3
Total	32	100.0

[a]One institution stated that the candidate must be a senior and one institution stated that the number of hours is not specified.

will grant such credit by the time the candidate has earned 39 semester hours.

Entrance requirements

As might be expected, some students will desire to receive college or university credit for trade and industrial experience without having

earned any credits in such an institution. Of the 49 institutions that grant such credit, 46 responded to the question, "Must the candidate meet all entrance requirements as stated in the college catalog before credit can be earned?", 43 or 93.48 per cent require that the candidate meet all entrance requirements before credit is granted for trade and industrial experience.

Number of hours granted

In answer to the question, "What is the maximum number of hours that a candidate can earn in this manner?", the responses indicated that there is a wide variation in the number of hours that is allowed. The lowest amount reported was four semester hours with one institution reporting a figure above 50. Figures in Table 18 indicate that of the 42 institutions that responded to this question, thirteen or 31 per cent grant from 10 to 19 semester hours credit and eleven or 26.2 per cent allow 20 to 29 hours of credit.

Other variations concerning this practice can be noted in the footnote to Table 18.

Figures in Table 19 indicate the average number of semester hours that the institutions allow per session (semester, quarter, or trimester). It should be noted that of the 42 institutions that indicated the maximum number of hours granted per candidate, only thirty stated how many they will grant per session. Of these respondents, it was found that maximum number of hours allowed per session runs from two to 48.

Table 18. Number of institutions reporting the maximum number of semester hours a student can receive for trade and industrial experience[a]

Number of hours	Number of institutions	Per cent
0-9	6	14.3
10-19	13	31.0
20-29	11	26.2
30-39	8	19.0
40-49	3	7.1
50-above	1	2.4
Total	42	100.0

[a]Two institutions reported that they do not have a limit. One institution reported that the number depends on the test score earned. One institution reported that it will grant as many hours as its catalog has in that particular field.

Residence credit

In many instances, candidates do not attend a college or university but do attempt to receive credit for trade and industrial experience. Whether the credit that is granted is to be classified as residence credit becomes of concern to the college administrator. Of the 49 institutions that do grant such credit, 37 or 75.5 per cent indicated that they classify credit earned for trade and industrial experience as residence credit.

Table 19. Average number of semester hours granted per semester, quarter, or trimester

Maximum number of hours granted per student	Number of institutions	Average number of hours per session
0-9	5	3.8
10-19	8	8.8
20-29	9	11.1
30-39	4	27.3
40-49	3	34.3
50-above	1	18.0
Total	30	100.0

Type of students

Many different types of personnel can apply for credit based on trade and industrial experience. One of these is the person who intends to teach industrial arts. Since his experience is based on vocational experience, it was expected that many institutions would not grant credit to such a candidate. Another type of person is one who desires graduate credit based upon his past experience. A third type of candidate is one who has gained his experience in more than one field. The 49 respondents were asked about these three types.

Industrial arts teachers In response to the question about industrial arts teachers, 24 or 51.1 per cent of the respondents indicated that they grant college or university credit for trade and

industrial experience if the candidate intends to restrict his teaching to industrial arts. This figure represents approximately one-half of the institutions studied in this section and indicates a difference of opinion concerning this practice.

Graduate students The data indicated that eight or 17.4 per cent of the 46 respondents will grant credit to graduate students. Of the eight that do grant such credit, five or 62.5 per cent will allow this credit to be applied towards a graduate degree.

More than one field Candidates for credit based on trade and industrial experience may have received this experience in more than one field. According to the 46 institutions that responded when asked if they will grant such credit to a candidate who has gained his experience in more than one field, 24 or 52.2 per cent replied yes. Again a definite split in opinion was noted without a distinguishable trend in either direction.

Prerequisites for Credit

Eight prerequisites which might be met by a candidate prior to his receiving credit based on trade and industrial experience were listed under the heading, prerequisites for credit. These prerequisites must be met through actual experience in industry or a trade while attending the college or university where the credit is granted. Data on these prerequisites were obtained from the institutions by questionnaire.

Approval of the State Department of Vocational Education

According to the data in Table 20, seventeen or 40.5 per cent of the

Table 20. Number of institutions that have prerequisites prior to the granting of credit for trade and industrial experience

Prerequisites	Institutions Yes	No	Per cent yes	Total
Approval of the State Department of Vocational Education	17	25	40.5	42
Completion of a basic teacher training program	16	27	37.2	43
Bachelor's degree	2	38	5.3	41
Teaching experience	5	35	12.5	40
Have served an apprenticeship	10	36	21.7	46
Pass selected courses	19	26	42.2	45
Recommendations of previous employers	28	18	60.9	46
Be enrolled in college when credit is granted	39	5	88.6	44

42 responding institutions require that the candidate have the approval of the State Department of Vocational Education prior to the evaluation of his experience. This split between the institutions indicated a lack of consistency between institutions and state departments.

Teacher training program

Sixteen or 37.2 per cent of the institutions require that the candidate complete a teacher training program prior to the evaluation of his experience. This indicates the necessity for those candidates

to first enroll in the institution to complete the program in teacher education.

Bachelor's degree

It was noted in Table 17, page 57, that five institutions require that the candidate complete over 100 residence semester hours before credit can be granted. Of these five institutions, four require that the candidate have enough hours completed in residence for a bachelor's degree. From the data in Table 20 it can be observed that two or 5.3 per cent of the institutions require the candidate to have his bachelor's degree prior to his evaluation for credit.

Teaching experience

The data in Table 20 indicates that five or 12.5 per cent of the institutions require that the candidate have some teaching experience prior to his evaluation for credit. Since only two institutions require that the candidate have a bachelor's degree, it appears that teaching experience without a degree is acceptable. Of the five institutions that require teaching experience, three stated a specific number of months that were required. These were: 1. Four months 2. Nine months 3. Twelve months. One institution required no specific amount and one institution did not respond.

Apprenticeship

It can be observed from the data in Table 20 that ten or 21.7 per cent of the 46 responding institutions require that the candidate for credit must have served an apprenticeship. Of those ten institutions,

seven stated that a definite number of years must be completed in this apprenticeship before the candidate is qualified for credit. Four institutions require that the candidate has served four years of a bona fide apprenticeship, one requires three years, one requires two years, and the other institution stated that it has different regulations for each trade.

Pass selected courses

Nineteen or 42.2 per cent of the 45 responding institutions require the candidate to have passed some selected course or courses before he can be considered for credit based on trade and industrial experience. The courses that were indicated by the respondents are listed in Table 21. These courses are listed alphabetically and reveal how many institutions list these courses as prerequisites for the granting of credit. It should be noted that in some cases the candidate has the opportunity to take one or more courses in a block or series of courses. It is interesting to note that the highest frequency occurred in the "methods" courses. This should help the new teacher as he begins his new career, especially since very few will have completed the teacher training program or their practice teaching.

Recommendations

Of the prerequisites listed in Table 22, it can be observed that recommendations of previous employers were required by most of the institutions. Of the 46 respondents, 28 or 60.9 per cent require that the previous employers submit their recommendations to the institution.

Table 21. Number of institutions that require courses before credit can be granted for trade and industrial experience[a]

Course	Number of institutions
Activity analysis	1
Analysis procedures	1
Applied electricity	1
Curriculum construction	3
Engineering drawing	1
Evaluation of industrial education	1
Fundamentals of woodworking	1
General metalworking	1
History and philosophy	2
Job analysis	4
Measurement and evaluation	1
Methods of trade and industrial teaching	7
Methods and materials of instruction	1
Occupational analysis	1
Philosophy of vocational education	3
Principles of industrial education	2
Principles of vocational education	2
Selection and development of instructional materials	4
Shop layout and management	1
Shop management and safety	1
Shop organization and management	2
Shop planning, organization, and control	2
Teaching methods	1
Testing	1
Trade analysis	1
Vocational philosophy	1

[a] Other responses were:

1. Candidate takes one course in his area of specialty.
2. Candidate takes any 22 hours in catalog.
3. Candidate takes any 30 hours in catalog.
4. Candidate takes 26 hours in professional courses.
5. Candidate takes 8 hours in law, philosophy, guidance, tests and measurements, or psychology.
6. Candidate takes 15 hours in his area of specialty.
7. Candidate takes 15 hours in English, mathematics, education, science, social science, or psychology and guidance.

Table 22. Recommendations required by institutions as proof of trade and industrial experience

Number of recommendations	Number of institutions	Per cent
1	6	28.6
2	1	4.8
3	5	23.8
1 from each previous employer	9	42.8
Total	21	100.0

Data in Table 22 indicate how many recommendations are required by the institutions.

Of those institutions who make recommendations mandatory before credit is granted, 60 per cent request the recommendation from the candidate's immediate past supervisor. The rest of the institutions request this information from the company personnel office or from the plant manager. One institution stated that if the candidate is self-employed the recommendation must come from a banker or lawyer.

Enrollment in the institution

Responses to the question about the necessity of the candidate being enrolled in the institution prior to the granting of credit indicated that 39 or 88.6 per cent of the institutions make this a prerequisite. This high percentage makes it mandatory that most recipi-

ents of credit for trade and industrial experience have some college or university training.

Months experience required

A definite amount of time must be spent in a trade or as a skilled industrial worker in order to be qualified for credit in a college or university. Data were gathered concerning these two factors.

Trade experience The data in Table 23 indicates how many institutions require a definite number of months of trade experience before credit can be granted. Of the sixteen institutions that stated a specific number of months, it was found that the average number of months required was 37.41.

Table 23. Number of institutions that require a definite number of months of trade experience

Months	Number of institutions	Per cent
12	5	22.7
24	2	9.1
36	6	27.4
60	1	4.5
84	3	13.6
Not specified	5	22.7
Total	22	100.0

Skilled industrial experience The data in Table 24 indicates how many institutions require a definite number of months of skilled industrial experience before credit can be granted. Of the seventeen institutions that stated a specific number of months, it was found that the average number of months required was 40.19.

Table 24. Number of institutions that require a definite number of months of skilled industrial experience

Months	Number of institutions	Per cent
2	1	5.0
5	1	5.0
12	3	15.0
36	6	30.0
48	1	5.0
60	1	5.0
72	1	5.0
96	1	5.0
108	1	5.0
Not specified	4	20.0
Total	20	100.0

Methods of Evaluation

Some means has to be used to evaluate the candidates' competence before college or university credit can be granted for trade and industrial experience. The means used to test the candidate, what is a passing grade, and who should prepare the examinations are just a few of the questions that the industrial education administrator must answer. In the section, methods of evaluation, these questions were answered by the respondents.

Testing

When asked if a candidate can receive credit without taking an examination from their institution, 10 of the 40 respondents or 25 per cent said yes. The data in Table 25 indicates how many semester hours on the average these ten institutions will grant based on the number of years spent as an apprentice and journeyman. It can be observed that the number of hours granted increases as the experience of the candidate increases.

Type of examinations The type of tests used by the institutions that grant college or university credit for trade and industrial experience were presented in Table 26. The three types of tests used are written, skill, and oral. It should be noted that in 73.9 per cent of the cases a combination of these three types is used. The most frequently used combination is that of written, skill, and oral. Seventeen or 37.0 per cent of the institutions use this combination. The combination of a written and skill test is also used frequently, with 14 or 30.4 per cent

Table 25. Number of semester hours granted for apprentice and journeyman experience without using tests to judge the candidate's proficiency

Experience[a]	Number of institutions	Average number of hours
One year experience	2	5
Two year apprentice	1	8
Three year apprentice	1	12
Four year apprentice	1	16
Plus one year journeyman	1	16
Plus two year journeyman	2	20
Total	8	

[a]Two institutions reported that their policy varies with each candidate.

of the institutions reporting that they use this technique. It is also interesting to note that none of the institutions grant credit based on a skill test alone. It must be used in a combination with written or oral examinations.

Development of the examinations Data in Table 27 indicated who developed the written and manipulative examinations that are used by the institutions that grant college or university credit for trade and industrial experience. The individual institutions that administer the tests usually construct their own tests. Twenty-five or 65.8 per cent of the institutions developed their own written examination and 24 or

Table 26. Types of tests used by institutions in granting credit for trade and industrial experience

Test	Number of institutions	Per cent
Written	5	10.9
Skill	0	0.0
Oral	5	10.9
Combination of written, skill, and oral	17	37.0
Combination of written and skill	14	30.4
Combination of written and oral	2	4.3
Combination of skill and oral	1	2.2
No test given	2	4.3
Total	46	100.0

75.0 per cent of the institutions developed their own skill examination. Other means used to develop the examinations are through the help of the state department of education, and industry, and one institution reported that it uses a national examination. Industry itself was involved in 10.5 per cent of the institutions when developing written examinations and 9.3 per cent of the institutions when skill examinations were developed.

Table 27. Number of institutions reporting who develops their written and skill examinations

Developed by	Number of institutions			
	Written	Per cent	Skill	Per cent
Institution	25	65.8	24	75.0
State department	4	10.5	2	6.2
Institution and industry	3	7.9	2	6.2
Institution and state department	3	7.9	3	9.5
Institution, state department and industry	1	2.6	1	3.1
National organization	1	2.6		
Institution and California Department of Education	1	2.6		
Total	38	100.0	32	100.0

Length of examinations The amount of time a candidate has to complete the written, oral, and skill examinations varies with the institutions. Data in Table 28 indicates how much time is spent on these three examinations. Twenty or 62.6 per cent of the institutions use two to four hours for the written examinations. Twelve or 41.3 per cent of the institutions use two to four hours for the skill examination and ten or 52.6 per cent of the institutions use one to three hours for the oral examinations.

Table 28. Number of hours spent for written, skill, and oral examinations

Hours	Number of institutions					
	Written	Per cent	Skill	Per cent	Oral	Per cent
1					5	26.3
2	6	18.8	3	10.3	3	15.8
3	6	18.8	2	6.9	2	10.5
4	8	25.0	7	24.1		
5	1	3.1	1	3.4		
6	1	3.1	4	13 8		
8	1	3.1	1	3.5		
15			1	3.5		
16			1	3.5		
Unspecified	4	12.5	4	13.8	4	21 1
Depends on candidate	4	12.5	4	13.8	4	21 1
Not determined	1	3.1	1	3.4	1	5.2
Total	32	100.0	29	100.0	19	100.0

There appeared to be a lack of consistency among the institutions, since 28.1 per cent of the institutions did not have a set policy for the length of the written examinations, 31.0 per cent did not for the skill examinations, and 47.4 per cent did not for the oral examinations.

Testing committee The personnel who make up the testing committee were listed in Table 29. It should be noted that they are

Table 29. Personnel who serve on testing committees

Personnel	Number of institutions
Area coordinator	1
Businessman	1
College representative	2
Consultant	2
Dean	4
Director, technical school	1
Employer	2
Industrial education department head	24
Industrial employee	2
Industrialist	5
Industrial education instructor	30
Outsider	2
Registrar	3
Representative of College of Business	1
Specialist	3
State department representative	7
Teacher educator	6
Trade and industrial representative	1
Trade and industrial counselor	1
Tradesman	5

listed alphabetically and written exactly as they were reported. The industrial education instructor and the industrial education department head appeared most frequently and also appeared together as a team in seventeen institutions. Many combinations of the personnel listed in Table 31 were listed as making up the testing committees. Of 45 responding institutions, 19 or 42.2 per cent reported that personnel from industry do assist in the testing of each candidate.

The size of the testing committees was found to vary. The data in Table 30 indicates the number of people who serve on individual committees. It can be observed that this number runs from one to a

Table 30. Number of examination committee members[a]

Number on committee	Number of institutions	Per cent
1	7	18.0
2	12	32.4
3	6	16.2
4	4	10.8
5	6	16.2
7	2	5.4
Total	37	100.0

[a]One institution stated that the entire industrial education staff serves on the examining committee. One institution stated that a definite number of hours has not been established. Three institutions stated that their state department handles their testing.

maximum of seven members with two persons serving most frequently.

Grading It was found that the 49 responding institutions use six different grading systems. However, when testing applicants for trade and industrial experience, it was found that only three grading systems were used. As can be observed from the data in Table 31, of the 43 institutions that responded, 22 or 47.8 per cent reported that they use a four point system, 22 or 47.8 per cent reported that they use a pass-fail system, and two or 4.4 per cent use a percentage figure as a cut-off point. All of the reporting institutions used 70 to 75 per cent as a minimum score.

Table 31. Grading system used when testing applicants' trade and industrial experience

Grading system	Number of institutions	Per cent
Four point	22	47.8
Pass-fail	22	47.8
Per cent basis	2	4.4
Total	46	100.0

The data in Table 32 indicates what constitutes a passing grade in those institutions using the four point system. Sixteen or 72.7 per cent of these institutions use a two point or a "C" grade as the minimum that a candidate can receive and still receive credit. Only four institutions or 18.2 per cent will allow a one point to be used as a passing mark.

Re-test It was found that if the candidate failed the first examination, eighteen or 50 per cent of the respondents would allow him to re-test at a later date. Of these 18 institutions, some feel that the candidate should be required to wait a definite period before the second examination. The data in Table 33 indicates how many weeks must lapse prior to the second examination.

When asked if the candidate needs additional work experience after failing the first examination, 9 or 64.3 per cent said yes. The data in Table 34 indicates how much additional work experience is required.

Table 32. The grade which constitutes a passing grade in those institutions using a four point system

Grade	Number of institutions	Per cent
A	0	0.0
B	2	9.1
C	16	72.7
D	4	18.2
Total	22	100.0

Table 33. Number of weeks that must lapse between the first and a second examination

Weeks	Number of institutions	Per cent
0	3	25.0
11	1	8.3
18	2	16.6
26	1	8.3
30	1	8.3
52	2	16.6
1 semester	2	16.6
Total	12	100.0

Table 34. Additional work experience required before a candidate can re-test

Weeks	Number of institutions	Per cent
13	1	11.1
18	1	11.1
26	1	11.1
52	1	11.1
Varies	4	44.4
Depends on what test is failed	1	11.1
Total	9	100.0

It can be observed that there is a great deal of inconsistency in this practice. A minimum of 13 weeks was reported to a maximum of one year with 5 institutions reporting that their policy varies with the situation.

Payment of fees

It was found that the responding institutions charge fees for tuition and for administering the examinations. Of the 45 responding institutions, eleven or 24.4 per cent indicated that the candidate must pay tuition for the credit granted. Of this group, one institution or ten per cent indicated that it does not require the candidate to pay

the tuition if he fails the examination.

Of the respondents, 25 or 58.1 per cent reported that they charge a fee for administering the examinations. Of these 25 institutions, one or 4 per cent stated that the money paid by the candidate is retained by the industrial education department. Two means are used to collect the funds for administering the examination. Seventy-six per cent of the 25 respondents were found to charge a fee for each test, while 24 per cent of the respondents charge a fee for each hour applied for.

The data in Table 35 indicates how much these 19 institutions charge for each examination and how much the other six institutions charge per hour. It can be seen that 52 per cent of the 19 institutions charge between two and ten dollars per test with a maximum of $100 being charged for one examination. The amount charged per hour varies from three dollars to $13.50 per hour with five dollars being charged most frequently.

Transfer credit

When asked if they will accept credit based on work experience from a transfer student, twenty or 43.5 per cent of the institutions reported that they will accept such credit. The other 23 institutions indicated that they would not accept the credit and that the candidate would have to take another examination at their institution for re-evaluation.

Recording of credit

The data in Table 36 indicates when the institution has the registrar record the amount of credit earned. Most of the institutions, that is 25 or 59.5 per cent, record the credit earned as soon as the candidate

Table 35. Amount charged for administering examinations, per test and per hour

	Number of institutions	Per cent
Amount per test		
$ 2.00	2	8.0
3.00	1	4.0
5.00	6	24.0
10.00	4	16.0
11.00	1	4.0
15.00	1	4.0
25.00	1	4.0
50.00	1	4.0
60.00	1	4.0
100.00	1	4.0
Subtotal	19	76.0
Amount per hour		
$ 3.00	1	4.0
5.00	2	8.0
7.50	1	4.0
13.50	1	4.0
25.00 for 30 hours	1	4.0
Subtotal	6	24.0
Grant total	25	100.0

Table 36. Time when credit earned is made a permanent part of the candidate's record

Time when recorded	Number of institutions	Per cent
One lump sum upon completion of all examinations	25	59.5
Specific number per session	9	21.4
After 15 hours are completed in any area	1	2.4
After 30 hours are completed in any area	1	2.4
After 32	1	2.4
After 60	1	2.4
After 93	1	2.4
With Junior standing	1	2.4
When candidate has enough hours earned to graduate	1	2.4
When candidate demonstrates his intent to stay in college	1	2.4
Total	42	100.0

passes the required examinations. Nine or 21.4 per cent record the credit quarterly, that is a portion of the total number of hours is recorded each quarter. One institution will not record the credit earned until the candidate has finished all the requirements for graduation. Of those institutions that grant a portion of the credit per

quarter, three indicated that they grant a maximum of three hours per quarter, two indicated that they grant 4 hours per quarter, one grants 6 hours per quarter, and one institution grants ten hours per quarter.

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